

Keeping up with science / Shari. <http://www.loc.gov/pictures/item/98518267/>.

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Using Primary Sources to Address STEM Across the Curriculum

The Library of Congress contains historically significant technical documents that can be used to promote science, technology, engineering and mathematics learning across the curriculum. Participants of this workshop engage in model activities to uncover the depth and breadth of Library of Congress digital resources applicable to classroom curriculum; decipher evidence to explore change over time and the impact of technological advancements; evaluate the impact of close reading strategies, data collection, and analysis of technical drawings in sample lessons; and develop unique lessons that apply inquiry to address Next Generation Science and Common Core Standards across subject areas.



Exterior view. Illuminated west façade view at night. Library of Congress Thomas Jefferson Building, Washington, D.C. 2007. <http://www.loc.gov/pictures/item/2007684251/>

Week 1

Introducing the Library of Congress

To Do Before Class

1. Watch the [Introduction to the Library of Congress](#) interactive module.
2. Read Rich Cairn article "[Primary Sources at the Heart of the Common Core.](#)"
3. Watch [Copyright and Primary Sources](#) interactive module developed by the Copyright Division of the Library of Congress.
4. Discussion Board Post: Investigate Fair Use
 - Print out a copy of the [Fair Use Check List](#) used in the online interactive module about [Copyright](#).
 - Open up the [Prints and Photographs Online Catalog](#).
 - Select any collection that interests you.
 - Select one primary source from the collection you chose.
 - Consider how you might use that primary source in your classroom and evaluate the copyright implications using the [Fair Use Check List](#).
 - Summarize your findings in this Discussion Board post giving the Title and the URL. Is it in the public domain or copyrighted? Based on your assessment of the copyright status, would you make copies of this item? Link to it? Post it on a website? Why?
5. Final Project Task: Select three lessons from your curriculum where primary sources could be used to enhance learning.

Collaborate Session

- Introduction of participants and course expectations
- Reflect: Questions on copyright? How do you teach digital citizenship in your classroom?
- Discuss: What is a primary source? What is a secondary source?



- Explore assigned section of Library of Congress site (in breakout rooms)
 - [Teachers Page](#)
 - [Chronicling America](#)
 - [World Digital Library](#)
 - [Exhibits](#)
 - [Maps](#)
 - [Inside Adams Blog](#)
 - [Webcasts](#)
 - [Ask a Librarian](#)
- Describe your assigned section and how you think it could be used to address STEM in a K-12 classroom.
- Primary Source Analysis Activity: “[A Woman Dropping Her Tea-cup...](#)”
 - This source is from the [World Digital Library](#). What details do you see? What do you know that might help you understand this source? What questions do you have? How can you find out more?
- Discussion of primary sources and the Common Core
 - How can primary sources from the Library of Congress help classroom teachers address CCSS in a STEM classroom? How can primary sources from the Library of Congress engage students in creative and critical thinking that is so important for science and technology?





The Washington map of the United States <http://www.loc.gov/item/98685197/>

Week 2

Finding and Selecting Primary Sources

To Do Before Class

1. Read [Key Considerations for Selecting Primary Sources](#).
2. Watch [Finding Primary Sources](#) interactive module.
3. Read blog post: [“Researching Climate Change in the Geography and Map Division”](#)
4. Discussion Board Post
 - A. Select keywords or search terms that are related to your final project topic.
 - B. Using this list of [STEM related resources from the Library of Congress](#), locate specific topic information from the Library of Congress collections. Enter the search terms in each of the search engines listed below to compare the results.
 - [Global Search](#) (Use the format selection menu to select a primary source format.)
 - [Advanced Google Search](#) (Then narrow your results by...site or domain to: loc.gov)
 - C. In the discussion forum, reflect on your individual classroom situation and describe your search results and what you have learned about searching for primary sources at the Library of Congress and selecting appropriate primary sources.
 - Describe at least 2 specific considerations for selecting primary sources that will be important for your own classroom.
 - What keywords or phrases yielded the *largest quantity* of results?
 - Which keywords or phrases yielded the *most usable/relevant* results?
5. Final Project Task
From your list of possible topics, select one to focus on for your final project lesson plan. Identify one specific Library of Congress collection or resource from your searches above to use in your final project.

Collaborate Session

- Discuss and debrief on search strategies and results and how they can be used for student research.
- Discuss key considerations for selecting primary sources as it relates to different classroom situations
- Introduction to Bibliographic Organizer



- Discuss other options for organizing and sharing digital primary sources.
- Activity: Exploring Scientific Debates
 - The class will be divided into two groups. Each group will use a digital breakout room to discuss and analyze the map assigned.
 - Map #1 <http://www.loc.gov/item/2003626426/>
 - Map #2 <http://www.loc.gov/item/2011594831/>
 - Bring the groups together and ask each room to report on their analysis of the map. Reveal the creation dates of each map. Discuss how scientific ideas are influenced by politics and public perception. Connect this with a modern scientific controversy.
- Reflection:
 - Why should I teach with primary sources?
 - How can students construct knowledge from primary sources?





Tuberculosis camp <http://www.loc.gov/pictures/item/97519148/>

Week 3

Analyzing Primary Sources and Supporting Inquiry with Primary Sources

To Do Before Class

1. Read "[Teaching Inquiry with Primary Sources](#)" by Barbara Stripling.
2. Read "[Scientific Literacy Redefined](#)".
3. Watch [Supporting Inquiry with Primary Sources](#) interactive module.
4. Using the Library of Congress Analysis Tool

Select one primary source from the list below to analyze. Open the Library of Congress [Analysis tool](#) and use the drop down menu to customize the form to the type of source you chose (i.e photograph, map, etc.).

- #1: [Book](#): *Consumption Curable* by Jacob Servoss Rose, 1841. Analyze pages 28-37
- #2: [Poster](#): *Outdoor play and tuberculosis*. New York: National Child Welfare Association: Co-operating with Natl. Assn. for the Study and Prevention of Tuberculosis, [between 1920? and 1923?]
- #3: [Photograph](#): *Sun parlor in tubercular hospital*. Photograph shows hospital ward with soldiers lying in beds; in background a nurse and possibly a doctor are seen. [between ca. 1910 and ca. 1920]
- #4: [Advertisement](#): *Use Van Beil's rye and rock, the tonic and only cure for coughs, colds and consumption*. 1888 Jan. 10.
- #5: [Map \(p. 94\)](#): *Statistical atlas of the United States...* United States. Census office. 9th census, 1870. [New York] J. Bien, lith., 1874.

Discussion Board Post:

- o Reflect on your experience going through the analysis process and how implementing this might impact in your classroom.
 - o Share specific data that you learned about consumption from the primary source you selected and discuss how the analysis process helped you synthesize the information.
 - o Attach your completed Analysis Form to your post.
5. Final Project Task: Develop a list of learning objectives for your lesson plan and ideas on how learning would be assessed.



Collaborate Session

- Reflect briefly on the Library's Analysis Tool and process. *What aspects are similar to the [scientific process model](#)?*
- Historical Context Activity: Point-of-view and Change Over Time
 - Reflect silently on this poster for a few moments:
<http://www.loc.gov/pictures/item/98516354/>
 - Compare and contrast this depiction with the ones analyzed in the Discussion Board posts this week.
 - Discuss your thoughts aloud as you consider these questions.
 - *How is this message different from previous ones?*
 - *What are the implications of this depiction, considering previous ones?*
 - *What could have brought about this change?*
 - Consider the wider implications.
 - *What factors changed so that a cure for TB was developed?*
 - *What can we learn from this episode in scientific history to help us combat disease today?*
 - *How does one discovery affect society as a whole?*
- Discuss: *What makes a good investigative question?*
Resources to consider:
 - Dimension #1: Developing Questions and Planning (p. 23-27):
<http://www.socialstudies.org/system/files/c3/C3-Framework-for-Social-Studies.pdf>
 - Investigative questions for science projects:
http://www.sciencebuddies.org/science-fair-projects/project_question.shtml#examples
- Reflect:
 - What impact does this activity have on how you think about the scientific process?
 - How would you leverage this analysis process with other topics?
 - How can teaching with primary sources enhance and motivate student learning across the curriculum?





<http://www.loc.gov/item/2002706696/>

Week 4

TPS Methodology Enriching STEM Learning

To Do Before Class

1. Activity: How Technology Changed Society (Modified from this [complete lesson](#))
 - Watch the History Channel's [video on the Brooklyn Bridge](#).
 - Read the June 12th post from the [Today in History](#) archives.
 - Discussion Board Post
 - How did New Yorkers learn about the Brooklyn Bridge? How was the new technology used in the Brooklyn Bridge greeted by the people of the time? Support your claim with evidence from the sources provided.
 - Consider a modern example of a technology that you like or use, but that your friends or colleagues are reluctant to use. What reasons might account for this difference?
2. Final Project Task: Develop the investigative question for your lesson plan.

Collaborate Session

- Debrief and reflect on Discussion Board posts.
- Introduction to [Chronicling America](#): The Brooklyn Bridge

The course facilitator will demonstrate the search function in this digital collection of historic newspapers. By limiting the date and state and using specific search terms participants will discover some of what newspapers in New York printed with regard to the construction of the Brooklyn Bridge.

 - Discuss: What information did we find that could have influenced public perceptions of this new bridge?



- Activity: Public Perceptions Impact Society
The class will be divided into two groups. Each group will use a digital breakout room to discuss and analyze the source assigned.

- Source #1 (song sheet): "[The Highway in the Air](#)"
- Source #2 (newspaper account) (1st article on the page):
<http://chroniclingamerica.loc.gov/lccn/sn83030272/1883-05-24/ed-1/seq-2.pdf>

The groups will come back together and report on the analysis of each source.

Discuss:

What point of view did each author project about the Brooklyn Bridge? What evidence did you find of this? Did the point of view surprise you?

What information did you find that could have influenced public perceptions?

What societal changes were implied by the sources?

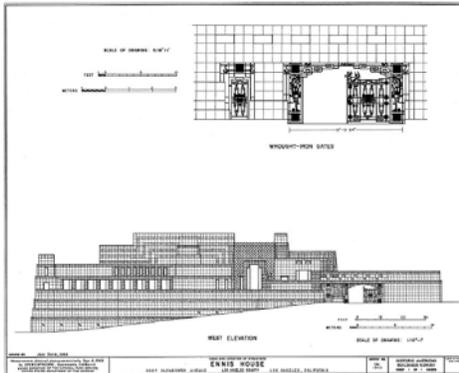
- Assessing Learning: Developing infographics to analyze data. Two examples of infographics:
 - [The Highway in the Air](#)
 - [The Sun, May 24, 1883 "Brooklyn Bridge"](#)

How do infographics fit into the STEM classroom?

What other tools could be used to assess learning?

- Introduce and invite participants to the [TPS Teachers Network](#).
- Reflect: Access the [STEM Group within the TPS Teachers Network](#). Discuss....
What tools and strategies do you use to help your students read and understand informational text?





Frank Lloyd Wright's Ennis House: <http://www.loc.gov/item/ca0227/>

Week 5

Rounding Out the Inquiry/Scientific Process

To Do Before Class

1. Develop a first complete draft of your [final project lesson plan](#).
2. Upload to the STEM group in the TPS Teachers Network, requesting feedback and suggestions.

Collaborate Session

- Activity: [Strategies for using architectural drawings in a STEM classroom](#)
 - Analyze this [photo](#).
What function does this building serve? Provide evidence to support your claim(s).
 - Now analyze this [architectural drawing](#) of the same building. Discuss...
What is the same in the photo and the drawing? What is different? Is there new information that can help you identify the function of the building?
What is the scale of this drawing? What are the dimensions of the privy? Explain what scale is in architectural drawings- in your own words.
 - Discussion: *How can you use architectural drawings in your classroom?*
Examples: (Explore and discuss in breakout rooms, if possible.)
 - Math Connection: Consider [all three views](#).
What geometric shapes are used to build this structure?
Use the dimensions to calculate square footage.
 - Social Science Connection: Compare and contrast the photo with a current image of your own school. Record your findings on a graphic organizer such as a Venn diagram. *What does this comparison indicate about societal views of school? Population? Technological advancements in design?*
 - Language Arts Connection: Using the data collected, write an essay on how school buildings have changed over time.



- Reflection and discussion:
 - *What instructional strategies help students navigate stages of the inquiry process?*
 - *What formative assessment tasks have been successful in your classroom?*
 - *What might you try next?*





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Chanute, Octave--Photographs, Kitty Hawk, North Carolina, Originals, 1901. <http://www.loc.gov/item/wright002818/>.

Week 6

Applying Primary Sources to Address STEM within Your Curriculum

To Do Before Class

1. Email the link to one Library of Congress primary resource, along with your investigative question, to Gay Thistle at gaythistle@gmail.com by Tuesday evening.
2. Be prepared to discuss and share your draft lesson plan with the group.

Collaborate Session

- **Peer presentations** (5 to 10 min. each)

Share with the class a brief overview of the lesson you developed, including:

- Brief description how the lesson fits within your classroom curriculum
- Student learning objectives
- Primary sources used from loc.gov
- Outline of steps for implementation of the lesson
- Evaluation criteria
- Questions
- Reflection: *What was your biggest take away from this course?*
- **Post Event Survey**
- Submit your final project via email to: swise@waynesburg.edu and gaythistle@gmail.com within two weeks.

